

## **New and little known species of *Cloephoracris* (Orthoptera: Caelifera: Romaleidae) from Central America.**

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**New and little known species of *Cloephoracris* (Orthoptera: Caelifera: Romaleidae) from Central America.** - The new species *Cloephoracris caesia* and *C. disrupta* are described from Costa Rica, representing the most northerly known occurrence of the tribe Hysichiini (Romaleinae). The previously unknown female of *Cloephoracris festae* (Giglio-Tos) is described from Panama, together with observations on the live male.

**Key-words:** Orthoptera - Acridoidea - Romaleidae - Hysichiini - taxonomy.

### INTRODUCTION

DESCAMPS (1979) erected the tribe Hysichiini of the Romaleinae for the genera *Hysichius* Stål, 1878 and five new genera, *Acrideumeras*, *Acridophaea*, *Cloephoracris*, *Porphoracris*, and *Pseudhysichius*. All are apterous insects of medium size, most of them ornamented with blunt spines and knobs, and inhabit neotropical wet forest. The tribe is predominantly South American, occurring in the Amazon basin and on both faces of the Northern Andes; only *Cloephoracris* is so far known to extend into Central America.

Hysichiini are rarely collected, and many species have been described only from single holotypes. AMÉDÉGNATO & POULAIN (1986) described the hitherto unknown males of two existing species and added two new ones; the same authors later (1994) erected a further genus (*Pareusychius*) for one of these latter species, provided a new key to the genera of Hysichiini, and discussed their relationships.

*Cloephoracris* is the only hisyichiine genus so far known to occur in Central America. The two known species, *nodulithorax* Descamps, 1979 (the type species of the genus) and *festae* (Giglio-Tos, 1897), come from Colombia and the extreme E. of Panama (Darién) respectively. They are known only from the male holotypes and one male paratype, and females of the genus are unknown. This article describes both sexes of a new species of the genus from Costa Rica, the male of a further new Costa Rican species and the previously unknown female of *C. festae*. The holotype male of *festae* is completely discoloured, and the original description is inadequate in this respect; the coloration of the living male is described below and it is figured for the first time. Some information on the biology of this species is provided.

Abbreviations of depositories: ANSP, Academy of Natural Sciences, Philadelphia, USA; INBio, Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica; MNHNP, Muséum National d'histoire naturelle, Paris, France; RC, the author's collection.

### **Cloephoracris** Descamps

DESCAMPS 1979: 21

AMÉDÉGNATO & POULAIN 1994: 14, 15.

The general features of the genus were given by DESCAMPS (1979). There are however 21 or 22 antennal segments, not 17, and his sentence "un groupe de granules sur le mésonotum proprement dit" is apparently an error; "métanotum" was doubtless intended. Integument of head, nota and pleura pitted, coarsely on head and thorax, finely on abdomen; sterna smooth and polished. Dorsolateral areas of thorax and abdomen and the anterior (ventral) surface of hind tibia with numerous white hairs in the male (the female is only sparsely haired, apart from the ovipositor valves). The cingulum is of unusual shape, being shallow and shell-like, confined to the dorsal surface of the genital apparatus, and only weakly notched anteriorly; the long delicate rami extend far posteriorly, wrapping around the upwardly flexed ventral valves and meet in the midline, supporting a collar of membrane which forms a ring around the tips of the valves. This collar is bounded anteriolaterally by two arcs of sclerotized membrane which also belong to the ectophallus (see Figs 2C, E; 5C, E).

#### KEY TO SPECIES OF *Cloephoracris* (MALES ONLY):

- 1 Fastigium long (Fig. 8A, B) . . . . . 2
- Fastigium short (Fig. 8C; DESCAMPS 1978, Fig. 4) . . . . . 3
- 2 Fastigium deeply grooved distally (Fig. 8A). General colour dark green; head, grooves between meso- and metanota, knee and distal parts of hind femur dark blue (Panama) . . . . . *festae* (Giglio-Tos 1897)
- Fastigium moderately grooved distally (Fig. 8B). General colour blue-grey, head brownish, hind knees and tibial spines black. Thoracic nodules very large (Costa Rica) . . . . . *caesia* n. sp.
- 3 General colour olive green, head orange, thorax mottled brown. External and internal carinae of hind femur lined prominently in black, interrupted by clear nodules. Thoracic nodules small (Costa Rica) . . . *disrupta* n. sp.
- Head, thorax and hind knees chocolate brown, remainder of body and legs green (Colombia). Thoracic nodules of medium size (Colombia) . . . . . *nodulithorax* Descamps, 1979

### ***Cloephoracris festae*** (Giglio-Tos)

*Hisychius festae* Giglio-Tos, 1897: 3; KIRBY 1910: 391; BRUNER 1911: 68  
DESCAMPS 1979: 22 (transferred to *Cloephoracris* n. g.)

The new material consists of a pair caught in copula in 1959, and a male and a last instar larval female collected by the author in 1997. Both males agree closely with the holotype (examined).

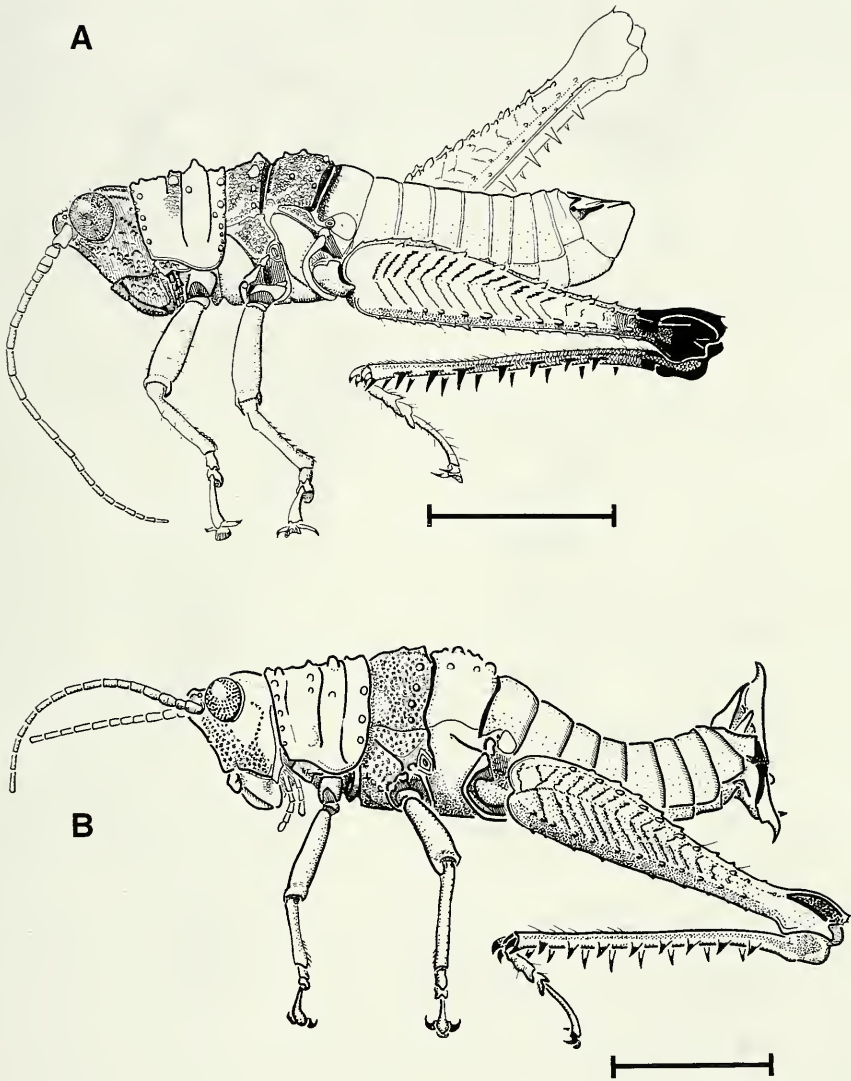


FIG. 1

*Cloephoracris festae* (G-T) A. Male, lateral view. B. Female, lateral view. Scale bars, 10 mm.

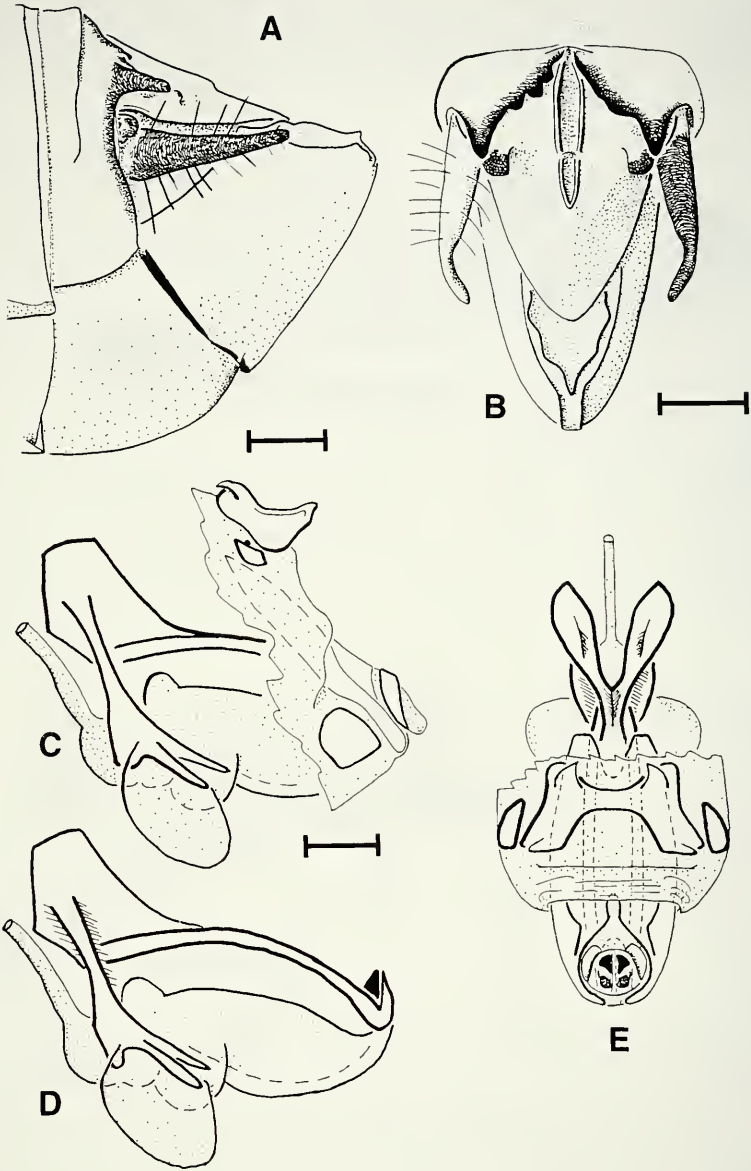


FIG. 2. *Cloeophoracris festae* (G-T). A-B. Male external genitalia. A. Lateral view. B. Dorsal view. The asymmetry of the furcula is present in the original specimen. C-E, internal genitalia, scale bar common to all. C. Entire phallic complex, lateral view. D. Endophallus, lateral view. E. Entire phallic complex, dorsal view. Scale bars, 1 mm.

MALE (Fig. 1A). External and internal genitalia (Fig. 2) similar to those of *C. nodulithorax* (DESCAMPS 1979, Figs. 7-10). Supraanal plate decorated with two low lateral sclerotized bosses, wider than they are high or long (Fig. 2B). Tips of aedeagal valves not visible in side view above the surrounding collar of ectophallic membrane; ectophallic ventrolateral sclerites present (Fig. 2C).

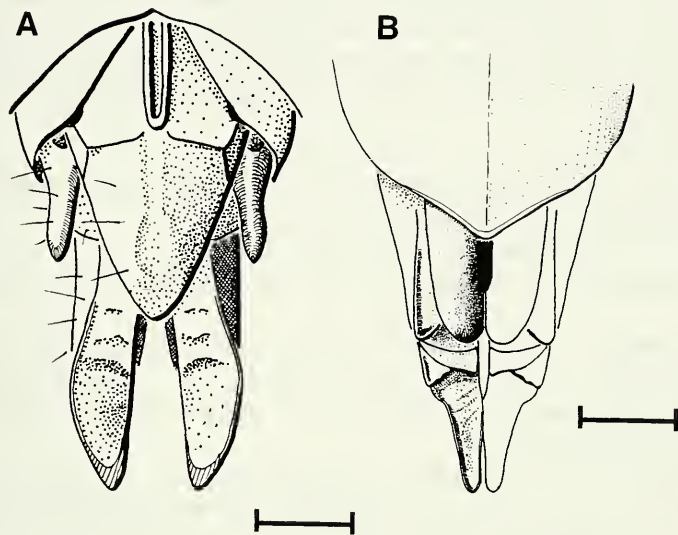


FIG. 3

*Cloephoracris festae* (G-T). Female genitalia. A. Dorsal view. B. Ventral view. Scale bars, 1 mm.

**Coloration.** The living male is strikingly coloured. General colour, dark green. Antennae dark purple basally, grading to salmon pink at tip. Head dark blue; eyes dark brown, palps green. The deep grooves between the nota of the meso- and metathorax, and between those of the metathorax and first abdominal segment, dark blue. Hind knees and distal part of femur, very dark blue, semilunar processes black. Dorsal articular membrane of the hind knee white (see below). Hind tibia proximally blueish-black, shading through purple to yellow and finally green distally. Tibial spines purplish black. Tibial spurs and claws of feet green basally, tipped black. Tarsi and pulvilli green. Cerci blackish green.

Pinned males appear to discolour progressively and become a uniform olive brown, other than the antennae. A rapidly appearing artifact is the black pigment in the basal segments of the antenna, noted by Giglio-Tos in the original description, which develops in freshly pinned specimens within a month. The holotype is now totally discoloured other than the semilunar processes.



FEMALE (Fig 1B). Similar in form to male, fusiform, widest and deepest in the meso/metathoracic region, equivalent to 23-25% of total length.

Antennae long, more ensiform than in male, finely pointed at tip, originally 22 flagellar segments (tips broken during transport). Fastigium and upper part of frontal ridge medially grooved. Lower part of frontal ridge flat, parallel sided; medial ocellus small and indistinct.

Anterior edge of pronotum bisinuate, posterior edge more or less straight. Ventral anterior angle of lateral lobe of pronotum sharply angular, ventral posterior angle smoothly rounded. Medial and lateral carinae absent. Dorsal midline crossed by three sulci, the anterior two very weak and indistinct. Prosternal process short, sharp, curved slightly anteriorly. Thorax ornamented with nodules, distributed as follows:

Pronotum:

- anterior edge: 4 pair of very small nodules;
- behind anterior edge but anterior to 1 sulcus, 2 pair larger nodules;
- sulci 1-2, 2 pairs of nodules plus one medially;
- sulci 2-3, 2 pair nodules, the medial pair being larger;
- posterior edge of pronotum, 4 pair of nodules, the two medial pairs being larger.

Mesonotum: a medial group of about 6 minute nodules, plus 5 pair larger nodules on posterior edge.

Metanotum: 1 pair large medial nodules and 1 pair small dorsolateral nodules, plus 2 pair on posterior edge.

Hind tibia with 8 external and 9 internal dorsal spines, apical spine included.

Cerci simple, tapering; supraanal plate long, triangular, pointed, divided transversely, grooved medially proximally, tectate (Fig. 3A). Ovipositor valves long and strong, smoothly hooked, not toothed, dorsal distal surface of superior valve concave (Fig. 3A), in side view similar to those of *C. caesia* (Fig. 6C). Subgenital plate with weak medial carina distally, posterior margins concave (Fig. 3B). The spermatheca of the unique adult female has not been dissected.

General colour a uniform medium brown, eyes very dark brown, antennae purple, terminal 7 antennal segments of flagellum pink. Semilunar processes of hind knees, hind tibial dorsal spines, undersides of tarsal segments, and claws black. Posterior margins of abdominal segments, outer margins of supraanal plate, blackish brown. Cerci brown basally, black distally. Articular membranes at neck and base of legs dark brown.

The final instar larval female (20 antennal flagellar segments) is closely similar, with the same coloration and distribution of major nodules. The general surface of the integument is however smoother than in the adult, and there is a weak medial dorsal carina running the full length of thorax and abdomen, corresponding to the line of splitting during ecdysis.

*Dimensions:* see Table 1.

TABLE 1. Dimensions of *Cleophoracris* species

Dimensions in millimetres:	<i>Cleophoracris festae</i>			<i>Cleophoracris caesia</i>			<i>Cleophoracris disrupta</i>			<i>Cleophoracris nodulithorax</i> #			
	Males:	97294	Holotype	Mean	863378	Holotype	Mean	Holotype	Holotype	Paratype	Mean	Holotype	Paratype
Specimen	94075	97294	Holotype	Mean	863378	Holotype	Mean	Holotype	Holotype	Paratype	Mean	Holotype	Paratype
Hind femur (F)	22.02	21.85	19.64	21.17	22.13	19.64	21.17	19.11	20.40	20.70	25.85	20.40	20.70
Rostrum-subgen. plate (L)	31.83	32.47	32.11	32.14	36.80	32.11	32.14	30.00	32.80	35.50	49.28	32.80	35.50
Pronotum (midline) (P)	5.45	5.51	5.49	5.48	5.79	5.49	5.48	5.15	5.80	6.00	7.25	5.80	6.00
Pronotum longest	5.68	5.63	5.6	5.64	5.96	5.6	5.64	5.28	5.96	6.00	7.50	5.96	6.00
Interocular space (IO)	0.63	0.6	0.58	0.60	0.68	0.6	0.60	0.61	0.62	0.61	0.85	0.62	0.61
Antennal pedicel (width) (PD)	0.78	0.89	0.73	0.80	0.83	0.73	0.80	0.62	0.83	0.86	0.87	0.83	0.86
Antenna length (A)	22.21	23.5	none	22.86	21.80 §	none	22.86	none	21.80 §	21.80 §	20.19	21.80 §	21.80 §
Hind tarsus 1st + 2nd segments	3.02	3.03	3.05	3.03	3.76	3.05	3.03	2.93	3.76	3.76	4.05	2.93	3.76
Hind tarsus 3rd. segment	none	3.99	3.33	3.66	3.68	3.33	3.66	3.39	3.68	3.68	4.11	3.39	3.68
<b>Ratios</b>													
F/P	4.04	3.97	3.58	3.86	3.82	3.58	3.86	3.71	3.82	3.71	25.64	3.71	3.71
L/P	5.84	5.89	5.85	5.86	6.36	5.85	5.86	5.83	6.36	5.83	49.42	5.83	5.83
IO/P	0.12	0.11	0.11	0.11	0.12	0.11	0.11	0.12	0.12	0.12	7.20	0.12	0.12
IO/PD	0.81	0.67	0.79	0.76	0.82	0.79	0.76	0.98	0.82	0.98	7.50	0.98	0.98
Tarsus 3/ 1+2		1.32	1.09	1.20	0.98	1.09	1.20	1.16	0.98	1.16	0.87	0.98	1.16
Tarsus 1+2+3/F		0.32	0.32	0.32	0.34	0.32	0.32	0.33	0.34	0.33	20.19	0.33	0.33
Tarsus 1+2+3/P		1.27	1.16	1.22	1.28	1.16	1.22	1.23	1.28	1.23	4.05	1.23	1.23
A/P	4.08	4.26	4.17	4.17	3.77	4.17	4.17	3.77	3.77	3.77	3.86	3.77	3.77
<b>Females:</b>													
Specimen	94076				339264				294397				
Hind femur (F)	24.59				25.64				26.05				
Rostrum-ovipositor tip (L)	47.19				49.42				49.13				
Pronotum (midline)	6.71				7.20				7.30				
Pronotum longest (P)	6.97				7.50				7.52				
Interocular space (IO)	0.96				1.09				1.04				
Antennal pedicel (width) (PD)	0.83				0.87				0.85				
Antenna length (A)	20.80				20.19				19.89				
Hind tarsus 1st + 2nd segments	4.02				4.05				4.12				
Hind tarsus 3rd. segment	3.95				3.86				4.11				
<b>Ratios</b>													
F/P	3.66				3.56				3.57				
L/P	7.03				6.86				6.73				
IO/P	0.14				0.15				0.14				
IO/PD	1.16				1.25				1.22				
Tarsus 3/ 1+2	0.98				0.95				1.00				
Tarsus 1+2+3/F	0.32				0.31				0.32				
Tarsus 1+2+3/P	1.19				1.10				1.13				
A/P	3.10				2.80				2.72				

§ only 16 segments of antenna available; dimension calculated proportionately from female.

# Dimensions from DESCAMPS (1979: 22)

## MATERIAL EXAMINED:

## PANAMA:

Darien Prov.: "Foreste, Rio Cianati (Darien)", no date (E. Festa). Holotype male. Specimen bears label "Hisyichius festae G.Tos Holotypus male C.S. Carbonell 1966" (red label) and "CSC 1355" (white label). The genitalia have been dissected, and bear the labels "Hisyichius festae G.T. Holotypus. Genitalia 1355" (red label) and "1355" (white label). (MRSNT).

Canal Zone: Piña area. 7.3.1959 (Hanson WJ). Male, in cop. (specimen no. 94075); female, in cop. (specimen no. 94076). (both ANSP (originally deposited in the Biology Museum of Utah State University at Logan). This locality is apparently Piña Camp (9°16'N, 80°00'W), near Fort Sherman, Provincia de Colón. Allotype female, here designated.

Panama Prov.: Cerro Campana, 950 m., trail through forest. 7.9.1997 (Rowell CHF, Windsor D). Male. (Specimen no. 97294) (RC).

Panama Prov.: Cerro Campana, 950 m., on *Pavonia rosea*. 13.9.1997 (Rowell CHF, Perez RA). Female larva, instar V. (Specimen no. 97429) (RC).

**BIOLOGY.** The specimens caught recently on Cerro Campana were on or near the low growing woody plant *Pavonia rosea* (Malvaceae). They ate voraciously of this plant in captivity but would accept nothing else offered to them, either plants from their original environment or others, and the female larva eventually died of starvation when this plant could not be supplied. The species shows every sign of being a specialist on this plant. It grows only in wet forest below about 1200 m, typically along paths or at the shaded edges of tree-fall clearings. There are other species of the genus in Panama and Costa Rica, including small trees; it is not known whether *Cloephoracris festae* accepts these, or whether other species of the genus have similar preferences. *Pavonia rosea* extends however from Mexico to Brazil (Croat 1978), exceeding the known distribution of *Chloephoracris*.

The dates of capture of the specimens are consistent with year-round breeding or with long-lived (approaching 12 months) adults. The records reported here extend the range of the species to central Panama, some 250 km NW of the type locality.

The shining white colour of the dorsal articular membrane of the hind knee contrasts strongly with the black surround. When the legs are flexed these membranes present two striking white spots when viewed from above or behind, and are probably used in intraspecific communication.

***Cloephoracris caesia* n. sp.**

Holotype male: COSTA RICA: Prov. Limón: Valle de la Estrella: Est. Miramar, Res. Biol. Hitoy-Cerere, 200 m., map reference LS N398100 E572800, Sept. 1992, (G. Carballo), specimen no. CRI000 863378 (INBio).

Allotype female: COSTA RICA: Prov. Limón: Valle de la Estrella: Res. Biol. Hitoy-Cerere, 200 m., map reference LN N184200 E643300, Sept. 1992, (G. Carballo), specimen no. CRI000 339264 (INBio).

Paratype: Same locality and collector as allotype, but Dec. 1990, one female, specimen no. CRI000 294397 (INBio).

Other specimens (not paratypes):

Prov. Puntarenas: Osa Peninsula, no other data, one female (INBio).

Prov. Puntarenas: Osa Peninsula, P.N. Corcovado: Llorona, map reference LS N282200 E498650 (L. Garling & C.H.F. Rowell), 10 March 1978. On palm leaf by stream. Larva, presumed to be this species. Specimen no. 78199 (RC).



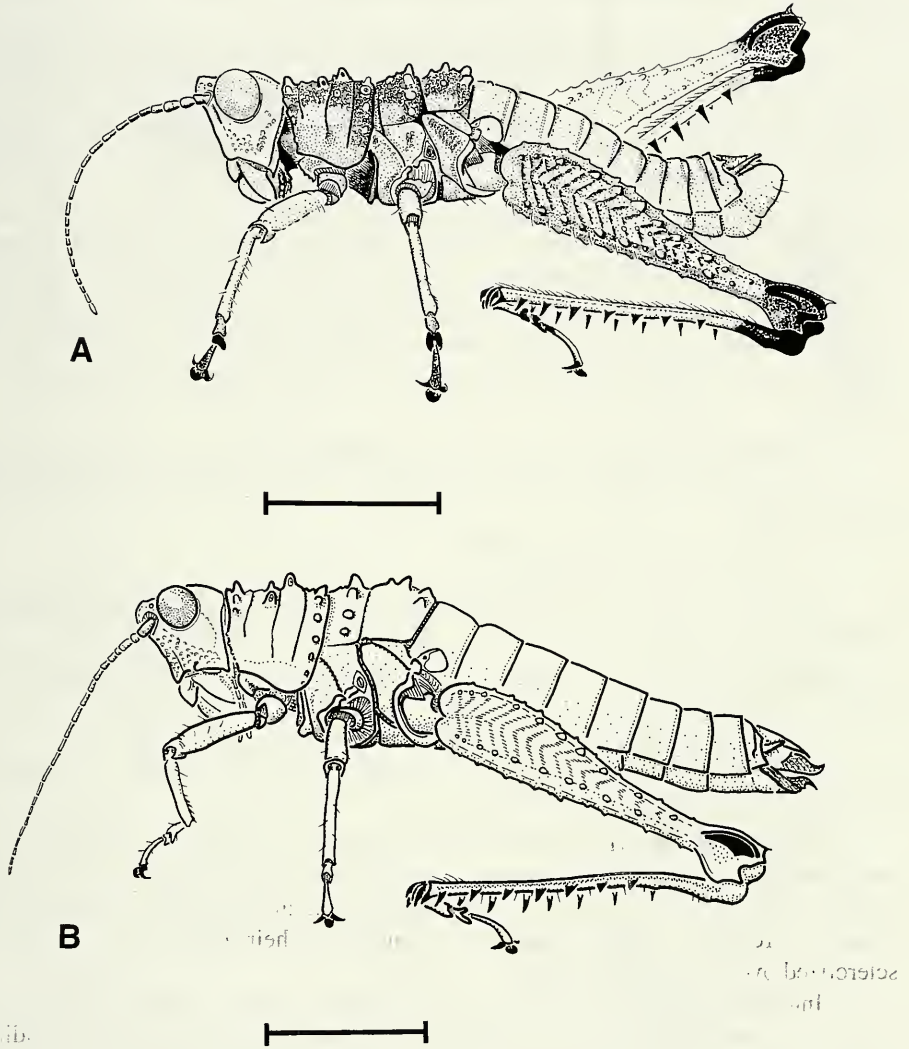


FIG. 4

*Cloephoracris caesia* n. sp. A. Male, lateral view. B. Female, lateral view. Scale bars, 10 mm.

*Etymology*: Latin *caesius*, blue gray, referring to the dominant coloration of the adult male.

MALE (Fig. 4A ). Structurally more similar to *C. nodulithorax* than to *C. festae*.

Antennae subsensiform, 21-22 segments, finely tapered. Fastigium flat or slightly uptilted, surface pitted, grooved medially distally; groove continues on to frontal ridge. Sides of frontal ridge subparallel, first widening, then constricting ventrally, obsolete well before medial ocellus, which is clearly visible.

Anterior margin of prothorax convex (not bisinuate, v. *festae*), posterior margin straight. Anterior ventral angle of lateral lobe sharply angular, posterior ventral angle smoothly rounded. Prosternal process short, pointed, vertical (not inclined forwards, v. *festae*). Medial and lateral carinae absent. Midline traversed by 4 thin but distinct sulci, all but the second most anterior of which extend on to the lateral lobes. Thoracic nodules large and prominent (larger than in *festae*), distributed as follows:

Pronotum:

- anterior margin of pronotum: 6 or more pairs of very small, variable nodules;
- posterior to margin, anterior to 1st sulcus: 2 pair nodules, the medial pair much the larger.

- sulci 1-2: 1 small medial nodule

- sulci 2-3: 1 pair dorsolaterally

- sulci 3-4: 2 pair, the medial pair large and close together, the other small and dorsolateral.

- posterior edge: 4 pair nodules, the second from the midline much larger than the rest.

Mesonotum: 4 pair nodules on posterior edge.

Metanotum: 2 pair (individually variable in size) in medial area, 1 pair dorsolaterally; 2 pair on posterior edge.

External genitalia (Fig. 5A, B). Points of furcula somewhat blunter than in the other species. Supraanal plate triangular, rounded at tip, grooved medially in proximal part, proximolaterally with paired bosses, longer and higher than they are wide (v. *C. festae*). Cerci long, pointed, thinning abruptly in their distal third, incurved, sclerotized over most of their length.

Internal genitalia (Fig. 5 C-E) similar to those of other species of the genus. The tips of both the dorsal and ventral valves project well above the surrounding collar of ectophallic membrane and are clearly visible in side view, and the specimen examined shows no sign of ectophallic ventrolateral sclerites (both characters contrast with the state in *C. festae*).

*Coloration*. Antennae brown, without contrastingly coloured tips. Head pale brown, palps and margin of labrum blue-gray.

Thorax olive brown with blue-gray cast, nodules paler than ground colour. Abdomen yellowish, genital region suffused blackish. Subgenital plate blue-grey. Fore- and middle legs and tarsi, blue-grey. Hind femur blue-grey. Knee blue-black, with pale articular membrane (see *C. festae* above). Hind tibia and tarsus yellow,

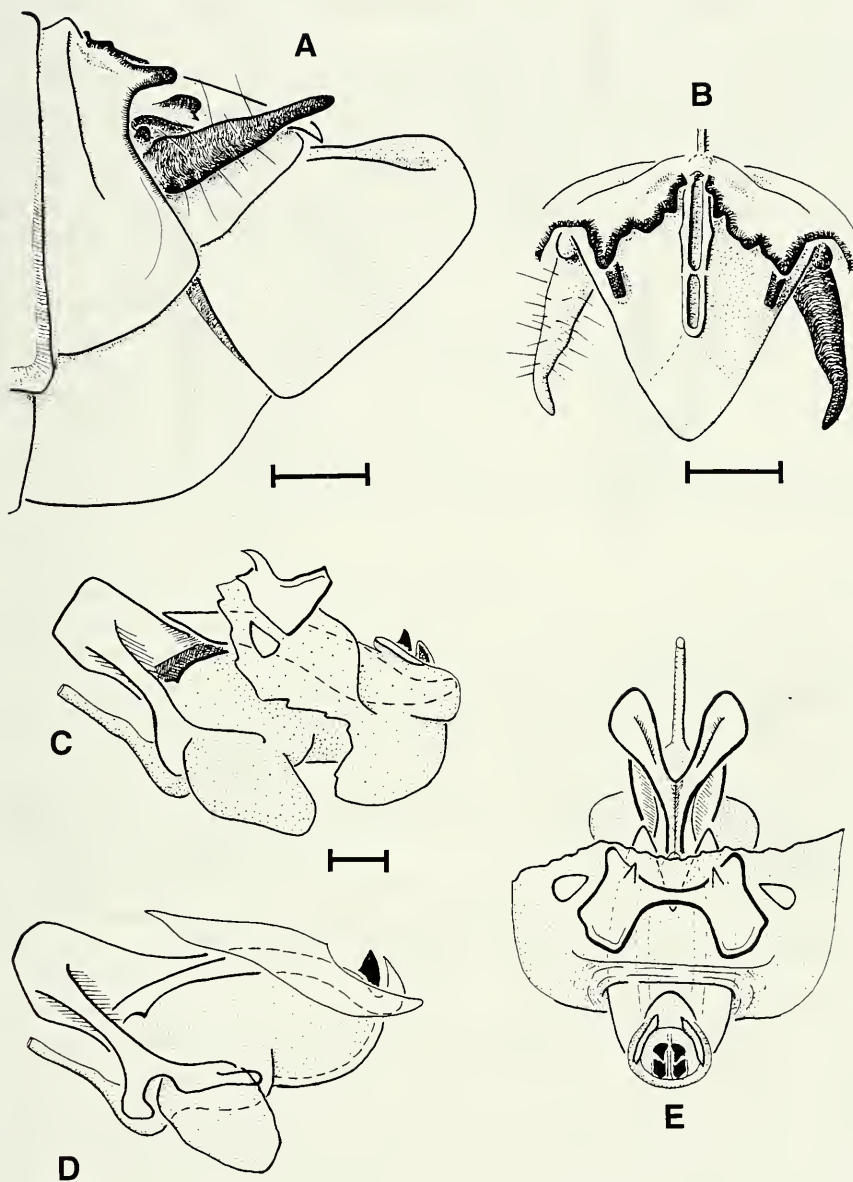


FIG. 5. *Cloephoracris caesia* n. sp. A-B. male external genitalia. A. Lateral view. B. Dorsal view. The asymmetry of the furcula is present in the original specimen. C-E. Internal genitalia, scale bar common to all. C. Entire phallic complex, lateral view. D. Endophallus, lateral view. E. Entire phallic complex, dorsal view. Scale bars, 1 mm.

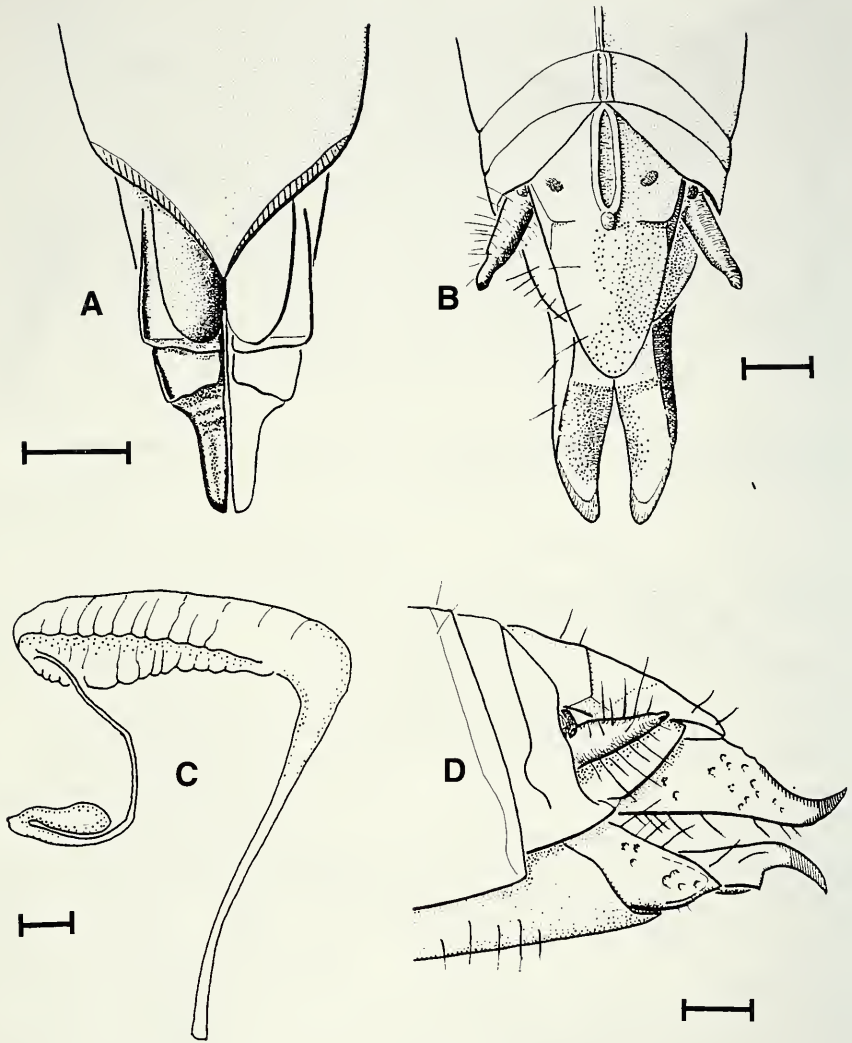


FIG. 6

*Cloephoracris caesia* n. sp. Female genitalia. A, B & D, external aspect. A. Dorsal view. B. Ventral view. D. Lateral view. C. Spermatheca of paratype female. Scale bars, 1 mm.



tibial spines black. The author has not seen the male alive, and the colours in life may be brighter than described here.

**FEMALE** (Fig. 3B). Antennae flattened dorsoventrally, tapering, but less ensiform than in *C. festae*. Fastigium medially grooved distally, frontal ridge less grooved than in male, or than in female of *C. festae*. Medial ocellus not visible.

Pronotal midline crossed by 3 weak sulci, corresponding to the three most posterior of the four sulci visible in the male. Nodules of thorax larger and more prominent than in *festae*, distributed somewhat differently from those of the male, as follows:

**Pronotum:**

- anterior margin of pronotum: 4 pair of small nodules.
- posterior to margin, anterior to 1st sulcus: 2 pair nodules, the medial pair much the larger.
- sulci 1-2: 1 pair plus one medial nodule
- sulci 2-3: 2 pair, the medial pair large and close together
- posterior edge: 5 pair nodules, the second from the midline much larger than the rest.

**Mesonotum:** 4 pair nodules on posterior edge.

**Metanotum:** 2 pair (individually variable in size) in medial area, 1 pair dorso-laterally; 2 pair on posterior edge.

Projections on carinae of hind femur larger and more pointed than in *C. festae*.

**External genitalia** (Fig. 6). Subgenital plate pointed, posterior margins angular rather than biconcave, with long terminal filament. Supranal plate and ovipositor valves similar to those of *C. festae*, but more elongate. Spermatheca (Fig. 6C) of remarkable size and shape, similar to that of *Hisychius nigrispinus* (Amédégnato & Poulain 1994, Fig. 27) and confirming the supposition of these authors that the two genera are closely related.

**Coloration.** General colour, reddish brown; eyes, antennae, thoracic nodules, darker than ground colour. Antennae yellowish at tip (not pink as in *C. festae*). Semilunar processes of hind knee, hind tibial spines, distal ends of cerci, tips of ovipositor valves, black.

**Dimensions:** see Table 1. Relative to *C. festae* the antennae may be slightly shorter proportionately. Otherwise the bodily proportions are very similar.

**Larval stages.** Only a single larval specimen of what is presumably this species (coming from the same locality as some of the adults) is known, probably of second or third instar. The larger knobs of the thoracic ornamentation are already visible, but the rest of the cuticle is smooth. **Coloration:** Pale brown, fore and middle legs somewhat lighter in colour. Hind femora with three dark bands. Hind tibia dark brown.

### **Cloephoracris disrupta** n. sp.

**Holotype male:** COSTA RICA: Prov. S José: Pozo Azul de Perrís, 325-550 ft, on foliage of forest undergrowth (C.H. Lankester & J.A.G. Rehn), 23. Aug. 1927, one male (ANSP). This specimen is that referred to in footnote 12 of Amédégnato & Poulain 1994, p. 15. The locality is usually spelt Pirrís, it is at 98-167 m., map ref. LS N400200 E431200.

*Etymology*: Latin *disruptus*, interrupted, referring to the conspicuous broken black lines on the hind femoral carinae.

MALE (Fig. 7A). Structurally more similar to *C. festae* than to *C. nodulithorax*. Smaller than the other species of the genus (see Table 1, Dimensions).

Both antennal flagella missing. Fastigium shorter than in the other species, (Fig. 8 and DESCAMPS 1979, Fig. 4), weakly downwards tilted, surface pitted, grooved medially distally; groove continues onto frontal ridge. Sides of frontal ridge subparallel, first widening, then constricting ventrally, extending to medial ocellus. Frons heavily pitted.

Anterior margin of prothorax weakly bisinuate, as in *C. festae*, posterior margin straight. Anterior ventral angle of lateral lobe sharply angular, posterior ventral angle smoothly rounded. Prosternal process short, pointed, vertical. Anterior margin (presternum) of prosternum heavily pitted. Medial and lateral carinae absent. Midline traversed by only 3 thin sulci (vide *C. caesia*), of which the two most posterior extend on to the lateral lobes. The most anterior sulcus seen in *caesia* is present only on the lobes in *disrupta*, and is obsolete in the midline. Thoracic nodules very small (yet smaller than in *festae*); their distribution differing from that given above for *festae* as follows:

Pronotum:

- sulci 2-3: 1 pair dorsolaterally and one additional pair medially
- posterior edge: 5 pair nodules, subequal.

Mesonotum: 5 pair nodules on posterior edge.

Metanotum: 2 pair (individually variable in size) in medial area, none dorsolaterally; 2 pair on posterior edge.

External genitalia (Fig. 7B, C). Furcula, supraanal plate and cerci similar to those of *C. festae* but comparatively little sclerotized. Midline of furcula with a circular excavation, bordered anteriorly by a raised rim. Subgenital plate keeled in midline distally.

Internal genitalia have been previously dissected out but are missing from the specimen, presumed lost. The male genitalia of the genus are however very homogenous, and it is unlikely that those of *C. disrupta* deviate significantly from the norm.

*Coloration*. Antennae missing. Head orange, eyes dark brown. General colour orange-brown, flecked with green on thorax, hind femur (especially in pregenicular region), and on the fore and middle femora and tibiae. Hind femur brown proximally, blue green distally, the dorsal and ventral external and internal carinae marked with interrupted lines of black, the interruptions corresponding to the major tubercles. Hind knee dark brown dorsally, blue-green ventrally. Hind tibia blue-green proximally, purple over most of its length, and yellow distally; tibial spines purple, but tibial spurs yellow, tipped brown. Hind tarsi yellow-green, pulvillus grey, claws green tipped with brown. Fore and middle tarsi dark brown. The deep grooves posterior to the meso- and metathorax are blackish brown. Cerci purple, darker distally.

The males of hisychiines discolour rapidly. The original coloration was probably predominantly blueish green rather than brown.

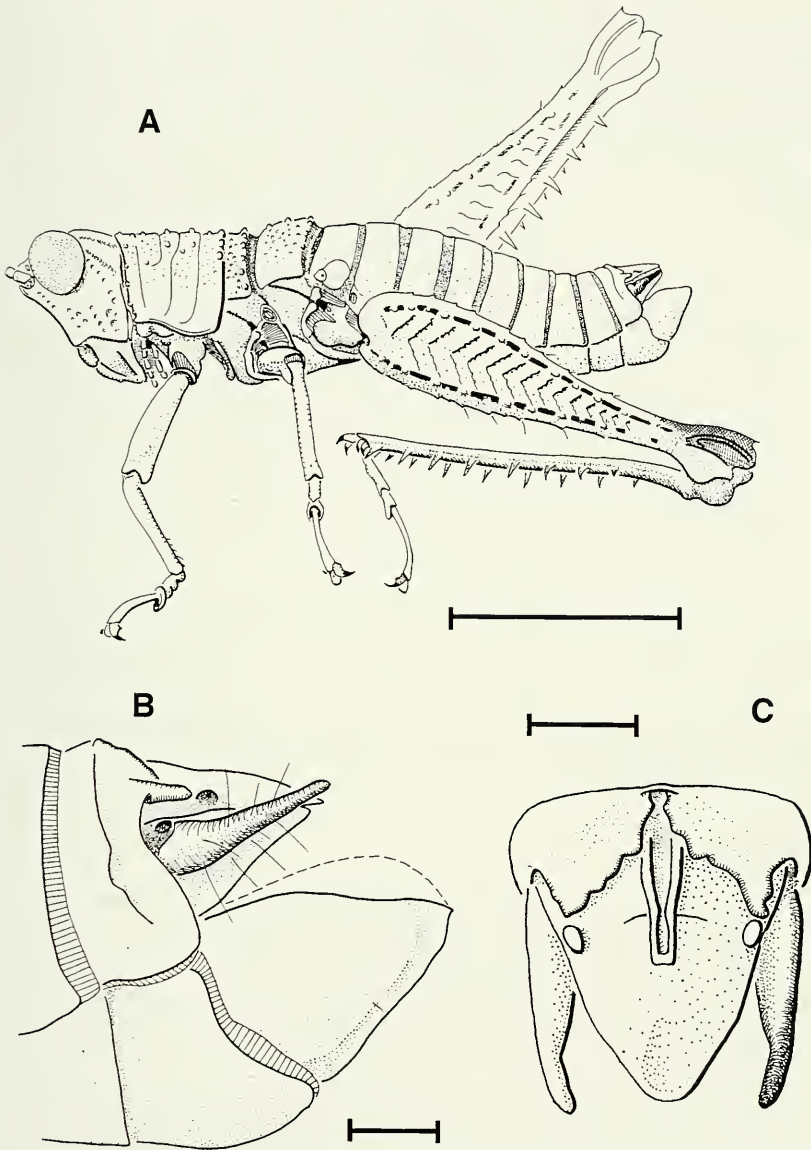


FIG. 7

*Cloephoracris disrupta* n. sp. A. Male, lateral view. Scale bar, 10 mm. B, C. scale bar common to both. Male external genitalia. B. Lateral view. C. Dorsal view. The asymmetry of the furcula is present in the original specimen. Scale bar, 1 mm.

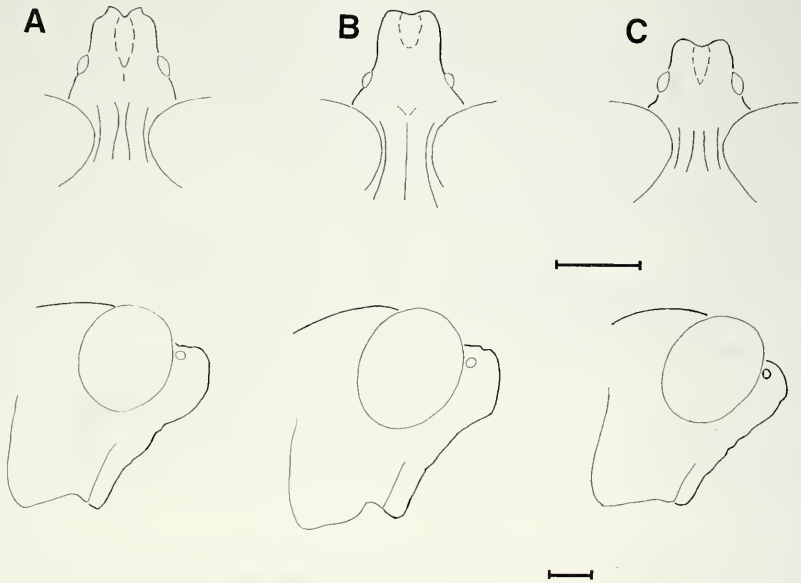


FIG. 8

Fastigium in dorsal view and head in profile of the males of A. *C. festae*, B. *C. caesia* and C. *C. disrupta*. Scale bars, 1 mm.

## DISCUSSION

*C. caesia* & *C. disrupta* extend the known geographical range of the tribe Hisychiini considerably northwards. The rarity and cryptic character of the genus makes it quite possible that it extends still further, at least on the Caribbean coast of Central America, where ecological conditions (lowland rainforest) are favorable for it.

The known localities of *C. caesia* lie on the Pacific and Caribbean coasts of Costa Rica (Fig. 9), and are separated by the ecologically very different Talamanca mountain range. This suggests the possibility that the species extends into western Panama, where there is continuous forest cover between the two coasts. The sparse capture dates of this taxon are consistent with the hypothesis of larvae hatching with the onset of the rains in the early months of the year, and a single generation per year, as in many Costa Rican forest species. *C. disrupta* is currently recorded only from a single locality on the mid-Pacific coast of Costa Rica, and suitable habitat is not found on that coast much further north than this.

AMÉDÉGNATO (1997) reports that in Amazonia the hisychiines *Hisychius nigripinus* and *Pseudhisychius nigroornatus* are polyphagous on the foliage of canopy





FIG. 9

Capture localities of *Cloephoracris* in Costa Rica.

trees and epiphytic lianas. In contrast, *Cloephoracris festae* appears likely to be a foodplant specialist and neither it nor *C. disrupta* can be exclusively arboreal. Nothing is yet known of the biology of the other species of the genus.

## ACKNOWLEDGEMENTS

I thank the Drs. C. Amédégno, D. Azuma, W. Hansen, and A. Solís for permission to examine specimens from their collections, Dr. C. Amédégno for discussion, Dr. D. Quintero for geographical information and logistical help in Panama, and Dr. R. A. Pérez for botanical identifications.

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